

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE (IPEA/US)

E. I. DU PONT DE NEMOURS AND COMPANY

INTERNATIONAL APPLICATION NO.: PCT/US04/10710

FILED: April 07, 2004

CASE NO.: CL2125WOPCT

FOR: METHOD AND APPARATUS FOR QUANTIFYING VISUAL SHOWTHROUGH OF  
PRINTED IMAGES ON THE REVERSE OF PLANAR OBJECTS

**RESPONSE TO WRITTEN OPINION**

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Attention: International Preliminary Examining Authority  
(IPEA/US)

Sir:

This is in response to the 29 APRIL 2005 Written Opinion in the above-noted patent application.


Submitted herewith is replacement sheet 18 and replacement Figure 7.

Replacement sheet 18 corrects the lack of clarity objections raised against Claims 1-12.

Replacement Figure 7 now shows point A referenced in Figure 8A to overcome the objection to the drawings.

Turning to the Examiner's objection to the title of the abstract as not matching that of the specification, the applicant invites the Examiner's attention to the "Response to Invitation to Correct Defects" dated August 4, 2004 wherein a replacement abstract page with the corrected title was submitted. For the Examiner's convenience a copy of the August 4, 2004 "Response to Invitation to Correct Defects" is also submitted herewith.

Respectfully submitted,

  
JESSICA M. SINNOTT  
ATTORNEY FOR APPLICANT  
Registration No.: 34,015  
Telephone: (302) 992-4895  
Facsimile: (302) 892-7949

Dated: 20 July 2005  
Enclosure

EV537169944US

## CLAIMS

What is claimed is:

1. A method for measuring the degree to which a printed image on a first side of a sheet is visible when illuminating and viewing a second side of the sheet, the method comprising:
  - a) creating a calibration image of a reference object containing no image by illuminating the reference object at an initial illumination level;
  - b) determining an average gray level of the reference object and adjusting the illumination level to achieve a predetermined average gray level;
  - c) illuminating the sheet at an initial illumination level the same as that used to create the calibration image and creating an image of the sheet;
  - d) measuring the ratios of the pixel intensities of the image of the sheet with the corresponding pixel intensities of the calibration image; and
  - e) calculating a mean value of the ratios of the pixel intensities.
2. An image analysis method for characterizing the showthrough of a printed image on the reverse surface of a substantially planar sample object having a reflective front surface, by measuring the optical reflectance of the front surface with a lens and a photodetector array, the method comprising:
  - (a) creating a frame-averaged dark current image representing the response of the photodetector array in the absence of light;
  - (b) uniformly illuminating, with a diffuse light source, the front surface of a reference object, said reference object having no image on its reverse, and creating a calibration image of the reference object, comprising the steps of ;
    - (1) illuminating the front surface of the reference object with the diffuse light source, the output of the light source being set to an initial illumination output level;
    - (2) creating a frame-averaged image of the front surface of the reference object;
    - (3) determining the average gray level in the image of the reference object created in step(b)(2);
    - (4) adjusting the illumination out put level by adjusting the output of the light source and repeating steps (2) and (3) until the

average light level reflected by the front surface of the reference object causes an average gray level in the image of step (2) to be within a

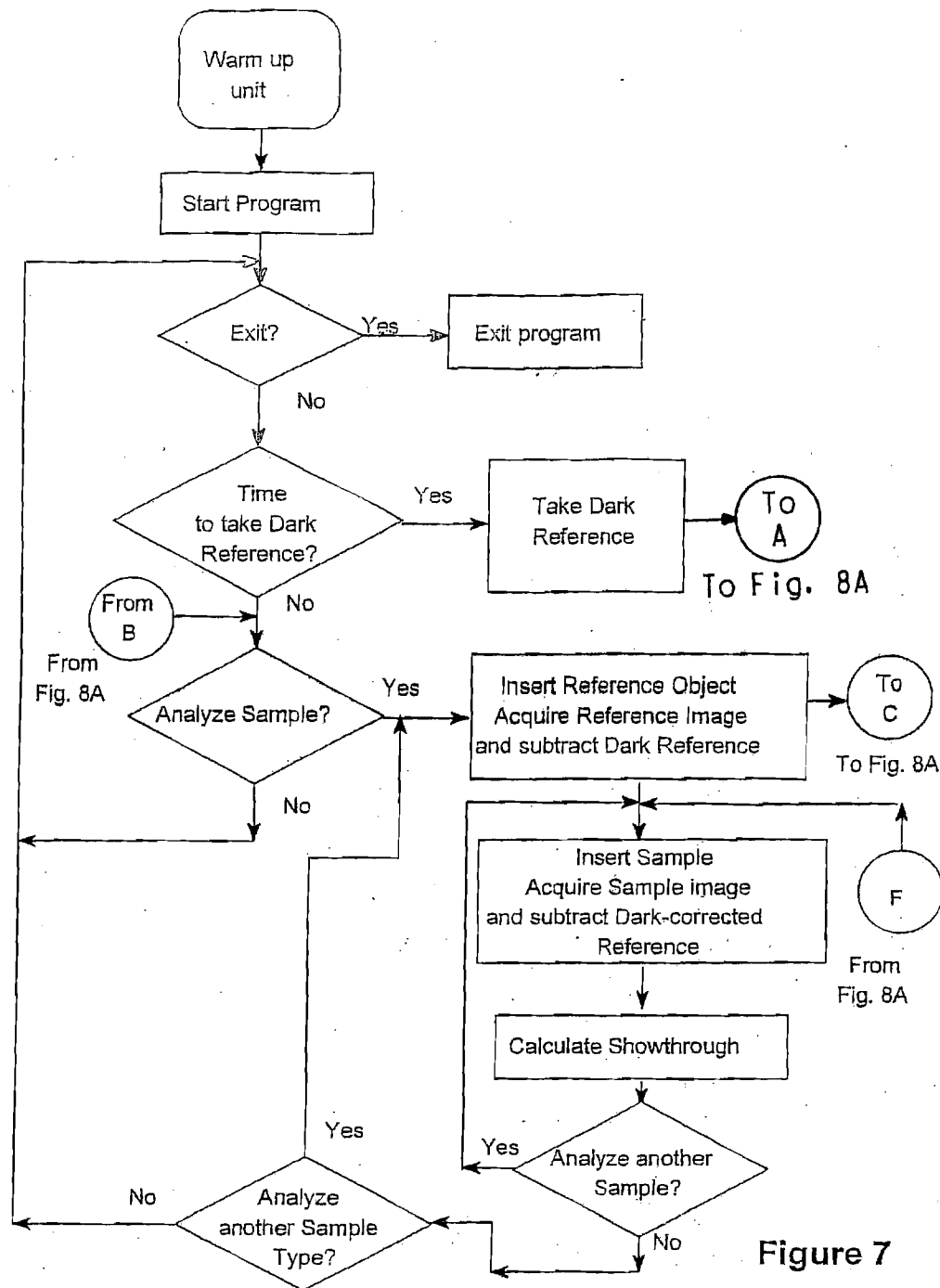


Figure 7

TRANSMITTAL LETTER TO THE UNITED STATES RECEIVING OFFICE	Date:	04 August 2004
	International Application No.:	PCT/US04/10710
	Docket No.:	CL2125PCT

Certification under 37 CFR 1.10 (if applicable):

EV416972512US	04 August 2004 (04.08.04)
Express Mail mailing number	Date of Deposit

I hereby certify that the application/correspondence attached hereto is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Asst. Commissioner for Patents, Box PCT, Washington, DC 20231.

	Nancy M. Cochran
Signature of person mailing correspondence	Typed or printed name of person mailing correspondence

I. ☒ A Response to an Invitation from the RO/US. The following document(s) is(are) enclosed:

- A. ☐ A Power of Attorney  
 B. ☒ Replacement Sheets:

**ABSTRACT PAGE**

- C. ☐ Submission of Priority Documents - Certified Copy of:

Country	App. No.	Filing Date

- D. ☐ Fees as specified on attached Fee Calculation Sheet form PCT/RO/101 annex

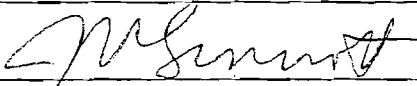
- E. ☒ Applicant respectfully requests an Extension of Time from July 9, 2004  
 to August 9, 2004 to respond to the Invitation to Correct Defects mailed  
June 9, 2004 Said extension is necessary because :

- II. ☐ A Request for Rectification under PCT Rule 91  
☐ A Petition  
☐ A Sequence Listing Diskette  
☐ Change under Rule 92<sup>bis</sup>

Sheet no(s). \_\_\_\_\_ of the request (PCT/RO/101).

- ☐ Applicant ☐ Address ☐ Citizenship  
☐ Agent ☐ Inventor

- III. ☐ Other (please identify):

The person signing this form is	SINNOTT, JESSICA M.
<input type="checkbox"/> Applicant	Typed name of signer
<input checked="" type="checkbox"/> Attorney/Agent (Reg. No.: 34,015 )	
<input type="checkbox"/> Common Representative	Signature

EV416972512US

PCT APPLICATION  
BOX PCT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE (RO/US)

IN THE INTERNATIONAL APPLICATION OF:

**E. I. DU PONT DE NEMOURS AND COMPANY**

INTERNATIONAL APPLICATION NO.: PCT/US04/10710

FILED: APRIL 07, 2004

CASE NO.: CL2125WOPCT

AUTHORIZED OFFICER: BARBARA FRIDIE

Title: METHOD AND APPARATUS FOR QUANTIFYING VISUAL SHOWTHROUGH OF  
PRINTED IMAGES ON THE REVERSE OF PLANAR OBJECTS

**RESPONSE TO INVITATION TO CORRECT DEFECTS**

Mail Stop PCT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

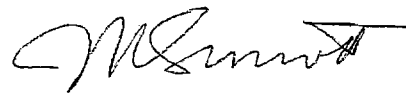
Attention: United States Receiving Office (RO/US)

Sir:

Pursuant to the Invitation to Correct Defects dated June 9, 2004, forwarded herewith is a replacement ABSTRACT page with the corrected title.

Should any fee be required in connection with the filing of this Invitation to Correct Defects, please charge such fee to Deposit Account No. 04-1930 (E. I. du Pont de Nemours and Company).

Respectfully submitted,



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Date: August 4, 2004

TITLE

METHOD AND APPARATUS FOR QUANTIFYING VISUAL  
SHOWTHROUGH OF PRINTED IMAGES ON THE REVERSE  
OF PLANAR OBJECTS

ABSTRACT

5           An image analysis method to quantify visual showthrough of printed  
images on the reverse face of planar objects, such as paper. An  
illumination level is set using a white reference object. A white reference  
image is stored in a computer memory. An image of a planar object  
10   having a printed image on the reverse face is stored in a computer  
memory. A pixel by pixel ratio of the two images is calculated and a mean  
value of the ratios is calculated to characterize the visual showthrough.  
The measurements are substantially independent of both the illumination  
level and image shading.

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